

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: ANDREW V SMITH 800 AIRPORT BLVD. SUITE 522 BURLINGAME, CA 94010	<h1>PCT</h1> <p>NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION</p> <p>(PCT Rule 44.1)</p> <table border="1"> <tr> <td>Date of mailing (day/month/year)</td> <td>30 JUL 2008</td> </tr> </table>	Date of mailing (day/month/year)	30 JUL 2008
Date of mailing (day/month/year)	30 JUL 2008		
Applicant's or agent's file reference FN-169-PCT	FOR FURTHER ACTION See paragraphs 1 and 4 below		
International application No. PCT/US 08/55964	International filing date (day/month/year) 05 March 2008 (05.03.2008)		
Applicant FOTONATION VISION LIMITED			

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
 - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, within **20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within **19 months**.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: <p style="text-align: right;">Lee W. Young</p> <p>PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>
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Form PCT/ISA/220 (January 2004)

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference FN-169-PCT	FOR FURTHER ACTION		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 08/55964	International filing date (<i>day/month/year</i>) 05 March 2008 (05.03.2008)	(Earliest) Priority Date (<i>day/month/year</i>) 05 March 2007 (05.03.2007)	
Applicant FOTONATION VISION LIMITED			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

I. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☒ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/55964

A. CLASSIFICATION OF SUBJECT MATTER

IPC(B) - G06K 9/00 (2008.04)

USPC - 382/117

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(B) - G06K 9/00 (2008.04)

USPC - 382/117

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 382/118, 163-165, 167, 275

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(USPT,USOC,EPAB,JPAB); Google Patents; Google Scholar

Search Terms Used: Image, red, eye, redevye, correction, defect, face, filling, display, storing, computer, set

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,116,820 B2 (LUO et al.) 03 October 2006 (03.10.2006) col 1, in 35-65; col 2, in 9-14; col 6, in 49-52	1-20
Y	US 6,980,691 B2 (NESTEROV et al.) 27 December 2005 (27.12.2005) col 5, in 28-36; col 7, in 41-46	1-20

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"-E" document member of the same patent family

Date of the actual completion of the international search

24 July 2008 (24.07.2008)

Date of mailing of the international search report

30 JUL 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
ANDREW V SMITH
800 AIRPORT BLVD.
SUITE 522
BURLINGAME, CA 94010

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

30 JUL 2008

Applicant's or agent's file reference
FN-169-PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US 08/55964

International filing date (day/month/year)

05 March 2008 (05.03.2008)

Priority date (day/month/year)

05 March 2007 (05.03.2007)

International Patent Classification (IPC) or both national classification and IPC

IPC(B) - G06K 9/00 (2008.04)

USPC - 382/117

Applicant FOTONATION VISION LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion
24 July 2008 (24.07.2008)

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 08/55964

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of:
 - a. type of material
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed
 - ☐ filed together with the international application in electronic form
 - ☐ furnished subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 08/55964

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
1. Statement				
Novelty (N)	Claims	1-20		YES
	Claims	NONE		NO
Inventive step (IS)	Claims	NONE		YES
	Claims	1-20		NO
Industrial applicability (IA)	Claims	1-20		YES
	Claims	NONE		NO
2. Citations and explanations:				
<p>Claims 1-20 lack an inventive step under PCT Article 33(3) as being obvious over US 7,116,820 B2 to Luo et al. (hereinafter 'Luo') in view of US 6,990,691 B2 to Nesterov et al. (hereinafter 'Nesterov').</p> <p>Regarding claim 1, Luo discloses a method of detecting and correcting a red-eye defect within a digital image, comprising: (a) acquiring an image including one or more non red eye defect regions having a red color (col 1, in 52-57); (b) performing in a first stage an initial segmentation of candidate redeye regions to determine a first set of one or more confirmed redeye regions designated for correction (col 1, in 50-50); (c) determining a location and orientation of any faces within the image (col 1, in 35-37); (d) analyzing the first set of confirmed redeye regions based on the determined location and orientation of said any faces, or based on a determination that there are no faces present within the image, to determine a probability that each confirmed redeye region appears at a position of an eye (col 1, in 35-37); (e) removing from the first set any confirmed redeye regions having at least a certain threshold probability of being a false positive, and thereby generating a second set (col 1, in 60-65); and (f) correcting the second set of confirmed red eye regions and generating a red eye corrected image which has the second set of confirmed red eye regions corrected therein (col 2, in 9-14). Luo does not specifically disclose (g) electronically storing, transmitting, further processing or editing, or displaying the red eye corrected image, or combinations thereof. However, Nesterov does disclose (g) electronically storing, transmitting, further processing or editing, or displaying the red eye corrected image, or combinations thereof (col 5, in 34-36). It would have been obvious to one of ordinary skill in the art to combine the correcting a red-eye defect of Luo with the image processing of Nesterov to provide efficiency in digitizing the image (Nesterov col 5, in 28-34).</p> <p>Regarding claim 2, the combination of Luo and Nesterov discloses the method of claim 1, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises pixel analyzing (col 1, in 53-55).</p> <p>Regarding claim 3, the combination of Luo and Nesterov discloses the method of claim 2, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises falsing and verification filtering (col 6, in 49-52).</p> <p>Regarding claim 4, the combination of Luo and Nesterov discloses the method of claim 1, and Luo further discloses wherein the analyzing and removing are performed prior to any correcting of the image (col 1, in 52-65).</p> <p>Regarding claim 5, the combination of Luo and Nesterov discloses the method of claim 1, and Nesterov further discloses initially correcting the first set of confirmed redeye regions and generating an initial corrected image prior to the analyzing and removing and the generating of said red eye corrected image (col 7, in 41-46).</p> <p>Regarding claim 6, the combination of Luo and Nesterov discloses the method of claim 1, and Luo further discloses wherein the one or more faces further include at least one red eye defect such that the second set comprises a non-empty set (col 1, in 55-60).</p> <p>Regarding claim 7, the combination of Luo and Nesterov discloses the method of claim 1, and Luo further discloses wherein the second set comprises an empty set such that no actual redeye regions are corrected in the image (col 1, in 40-46).</p> <p>Regarding claim 8, Luo discloses an embedded image acquisition and processing system, comprising: (a) an image acquisition subsystem (col 1, in 52-57); (b) a red eye filter that performs in a first stage an initial segmentation of candidate redeye regions detected within an acquired image to determine a first set of one or more confirmed redeye regions designated for correction (col 1, in 50-50); (c) a face location and orientation detector (col 1, in 35-37); (d) an analysis filter that determines a probability that each confirmed redeye region appears at a position of an eye based on determining face location and orientation information from the face location and orientation detector (col 1, in 35-37); and (e) a processor for correcting the red eye defects of the confirmed red eye regions of the first set minus any having at least a certain threshold probability of being a false positive and generating a red eye corrected image (col 1, in 60-65). Luo does not specifically disclose (f) wherein the red eye corrected image is electronically stored, transmitted, further processed or edited, or displayed, or combinations thereof. However, Nesterov does disclose (f) wherein the red eye corrected image is electronically stored, transmitted, further processed or edited, or displayed, or combinations thereof (col 5, in 34-36). It would have been obvious to one of ordinary skill in the art to combine the correcting a red-eye defect of Luo with the image processing of Nesterov to provide efficiency in digitizing the image (Nesterov col 5, in 28-34).</p>				
-Please see continuation sheet-				

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 08/55964

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 13 contains an error rendering the claim ambiguous as recited.

Claim 13 reads: "The one or more storage devices of claim 8, wherein no redeye defects are corrected when no faces are detected within the image." Claim 8 contains no antecedent basis for "one or more storage devices." For the purposes of this International Search Report, Claim 13 is interpreted as depending from Claim 8 and interpreted as: "The system of claim 8, further comprising one or more storage devices, wherein no redeye defects are corrected when no faces are detected within the image."

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 08/55964

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:
Box V.2. Citations and Explanations

Regarding claim 9, the combination of Luo and Nesterov discloses the system of claim 8, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises pixel analyzing (col 1, ln 53-55).

Regarding claim 10, the combination of Luo and Nesterov discloses the system of claim 9, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises falsing and verification filtering (col 6, ln 49-52).

Regarding claim 11, the combination of Luo and Nesterov discloses the system of claim 8, and Luo further discloses wherein the analyzing and removing are performed prior to any correcting of the image (col 1, ln 52-65).

Regarding claim 12, the combination of Luo and Nesterov discloses the system of claim 8, and Nesterov further discloses wherein the processor further for initially correcting the first set of confirmed redeye regions and generating an initial corrected image prior to the analyzing and removing and the generating of said red eye corrected image (col 7, ln 41-46).

Regarding claim 13, the combination of Luo and Nesterov discloses the system of claim 8, and Luo further discloses wherein no redeye defects are corrected when no faces are detected within the image (col 1, ln 40-46).

Regarding claim 14, Luo discloses one or more storage device having processor-readable code embodied therein for programming one or more processors to perform a method of detecting and correcting a red-eye defect within a digital image, the method comprising: (a) acquiring an image including one or more non red eye defect regions having a red color (col 1, ln 52-57); (b) performing in a first stage an initial segmentation of candidate redeye regions to determine a first set of one or more confirmed redeye regions designated for correction (col 1, ln 50-60); (c) determining a location and orientation of any faces within the image (col 1, ln 35-37); (d) analyzing the first set of confirmed redeye regions based on the determined location and orientation of said any faces, or based on a determination that there are no faces present within the image, to determine a probability that each confirmed redeye region appears at a position of an eye (col 1, ln 35-37); (e) removing from the first set any confirmed redeye regions having at least a certain threshold probability of being a false positive, and thereby generating a second set (col 1, ln 60-65); and (f) correcting the second set of confirmed red eye regions and generating a red eye corrected image which has the second set of confirmed red eye regions corrected therein (col 2, ln 9-14). Luo does not specifically disclose (g) electronically storing, transmitting, further processing or editing, or displaying the red eye corrected image, or combinations thereof. However, Nesterov does disclose (g) electronically storing, transmitting, further processing or editing, or displaying the red eye corrected image, or combinations thereof (col 5, ln 34-36). It would have been obvious to one of ordinary skill in the art to combine the correcting a red-eye defect of Luo with the image processing of Nesterov to provide efficiency in digitizing the image (Nesterov col 5, ln 28-34).

Regarding claim 15, the combination of Luo and Nesterov discloses the one or more storage devices of claim 14, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises pixel analyzing (col 1, ln 53-55).

Regarding claim 16, the combination of Luo and Nesterov discloses the one or more storage devices of claim 15, and Luo further discloses wherein the performing of the first stage initial segmentation of red eye regions comprises falsing and verification filtering (col 6, ln 49-52).

Regarding claim 17, the combination of Luo and Nesterov discloses the one or more storage devices of claim 14, and Luo further discloses wherein the analyzing and removing are performed prior to any correcting of the image (col 1, ln 52-65).

Regarding claim 18, the combination of Luo and Nesterov discloses the one or more storage devices of claim 14, and Nesterov further discloses wherein the processor further for initially correcting the first set of confirmed redeye regions and generating an initial corrected image prior to the analyzing and removing and the generating of said red eye corrected image (col 7, ln 41-46).

Regarding claim 19, the combination of Luo and Nesterov discloses the one or more storage devices of claim 14, and Luo further discloses wherein the one or more faces further include at least one red eye defect such that the second set comprises a non-empty set (col 1, ln 55-60).

Regarding claim 20, the combination of Luo and Nesterov discloses the one or more storage devices of claim 14, and Luo further discloses wherein no redeye defects are corrected when no faces are detected within the image (col 1, ln 40-46).

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.